# AMENDMENT TO THE CLAIMS

The below listing of claims will replace all prior versions, and listings, of claims in the application.

1.      (Currently Amended) An unobtrusive database object copy method, comprising: identifying one or more source database objects;

creating a snapshot of the one or more source database objects at a point-in-time in a manner that does not substantially block access to the source database objects; [[and]]

~~making the snapshot consistent as of the point-in-time.~~;

identifying changes to the source database objects as of the point-in-time that do not exist in the snapshot;

updating the snapshot to reflect the identified changes;

identifying inflight units of work associated with the source database objects as of the point-in-time, wherein each inflight unit of work is associated with one or more database object updates; and

removing each of the one or more database object updates associated with each identified inflight unit of work from the snapshot.

2.      (Currently Amended) The method of claim 1, wherein the act of identifying one or more source database objects comprises identifying one or more tables in a relational database.

3.     (Original) The method of claim 2, further comprising identifying one or more indexes associated with the one or more tables.

4.     (Original) The method of claim 1, wherein the act of creating comprises generating a snapshot using one or more intelligent storage devices.

5.     Cancelled.

6.     Cancelled.

7.     (Currently Amended) The method of claim 1 [[6]], wherein the act of removing does not include removing database object updates that effect structural changes in the database objects.

8.     (Currently Amended) The method of claim 1 [[6]], wherein the act of identifying changes further comprises:

     identifying a page in memory in the snapshot that each identified change is associated with; and

     sorting the identified pages.

9.     (Original) The method of claim 8, wherein the act of updating comprises updating pages in the snapshot in their sorted order.

10.    (Currently Amended) The method of claim <u>1</u> [[6]], wherein the act of identifying inflight units of work further comprises:

      identifying a page in memory in the snapshot that each identified inflight unit of work is associated with; and

      sorting the identified pages.


11.    (Original) The method of claim 10, wherein the act of removing comprises removing each of the one or more database object updates from the snapshot in their sorted order.


12.    (Original) The method of claim 11, wherein the act of removing does not include removing database object updates that effect structural changes in the database objects.

13.    (Currently Amended) An unobtrusive database object copy method, comprising:

identifying one or more source database objects in a database;

determining a point-in-time;

obtaining a prior copy of the identified one or more source database objects, said

prior copy having a creation time before the point-in-time; [[and]]

~~making the prior copy consistent as of the point-in-time.~~

identifying inflight units of work associated with the source database objects as

of the point-in-time, wherein each inflight unit of work is associated with one or more

database object updates, said identified inflight units of work including a unit of work

having an earliest start time, the earliest start time being closer to the creation time of

the prior consistent copy than a start time associated with any other identified inflight

unit of work;

applying database log entries to the prior copy from the creation time until the

earliest start time; and

applying database log entries to the prior copy from the earliest start time until

the point-in-time only if they are not associated with inflight units of work.

14.    (Currently Amended) The method of claim 13, wherein the act of identifying <u>one</u>
<u>or more source database objects</u> comprises identifying one or more tables in a
relational database.

15.    (Original) The method of claim 14, further comprising identifying one or more
indexes associated with the one or more tables.

16.     (Original) The method of claim 13, wherein the act of determining comprises determining a point-in-time that is prior to initiation of the unobtrusive database object copy method.

17.     (Original) The method of claim 13, wherein the act of obtaining comprises obtaining a prior copy against which database log entries may be applied.

18.     Cancelled.

19.     Cancelled.

20.     (Currently Amended) The method of claim 13 [[19]], wherein the act of identifying inflight units of work further comprises:

        identifying a page in memory in the prior copy associated with each database object update between the creating time and the point-in-time;

        identifying a page in memory in the prior copy associated with each database object update associated with each identified inflight unit of work; and

        sorting the identified pages.

21.     (Original) The method of claim 20, wherein the act of applying database log entries to the prior copy from the creation time until the earliest start time comprises applying said database log entries in their sorted page order.

22.     (Original) The method of claim 20, wherein the act of applying database log entries to the prior copy from the earliest start time until the point-in-time comprises applying said database log entries in their sorted page order.

23.     (Original) The method of claim 13, further comprising substituting the point-in-time consistent copy for the source database objects in the database.


24.     (Currently Amended) The method of claim 13 [[23]], further comprising:

   blocking access to the source database objects in a source database;

   replacing the source database objects in the source database with the point-in-time consistent copy of the database objects; and

   permitting access to the point-in-time consistent copy of the database objects in the database.

25.     (Currently Amended) An unobtrusive database object copy method, comprising:

identifying one or more source database objects in a database;

determining a point-in-time;

creating a snapshot of the one or more source database objects at a time after

the point-in-time and in a manner that does not substantially block access to the source

database objects in the database; [[and]]

~~making the snapshot consistent as of the point-in-time.~~

identifying changes to the source database objects as of the point-in-time that

do not exist in the snapshot;

updating the snapshot to reflect the identified changes;

removing all updates from the snapshot made after the point-in-time;

identifying inflight units of work associated with the source database objects as

of the point-in-time, wherein each inflight unit of work is associated with one or more

database object updates; and

removing each of the one or more database object updates associated with each

identified inflight unit of work from the snapshot.


26.     (Currently Amended) The method of claim 25, wherein the act of identifying <u>one</u>
<u>or more source database objects</u> comprises identifying one or more tables in a
relational database.


27.     (Original) The method of claim 26, further comprising identifying one or more
indexes associated with the one or more tables.

28.    (Original) The method of claim 25, wherein the act of determining comprises determining a point-in-time that is prior to initiation of the unobtrusive database object copy method.

29.    Cancelled.

30.    Cancelled.

31.    (Currently Amended) The method of claim <u>25</u> [[30]], wherein the act of removing each of the one or more database object updates associated with each identified inflight unit of work does not include removing database object updates that effect structural changes in the database objects.

32.    (Currently Amended) The method of claim <u>25</u> [[30]], wherein the act of identifying changes further comprises:
        identifying a page in memory in the snapshot that each identified change is associated with; and
        sorting the identified pages.

33.    (Original) The method of claim 32, wherein the act of updating comprises updating pages in the snapshot in their sorted order.

34.    (Currently Amended) The method of claim <u>25</u> [[30]], wherein the act of removing all updates further comprises:
        identifying a page in memory in the snapshot that each change to be removed is associated with; and
        sorting the identified pages.

35.    (Currently Amended) The method of claim 34 [[24]], wherein the act of

removing all updates further comprises removing all updates from the snapshot made

after the point-in-time in their sorted order.


36.    (Currently Amended) The method of claim 25 [[30]], wherein the act of
identifying inflight units of work further comprises:
       identifying a page in memory in the snapshot that each identified inflight unit of

work is associated with; and

       sorting the identified pages.


37.    (Original) The method of claim 36, wherein the act of removing each of the one
or more database object updates associated with each identified inflight unit of work
comprises removing each of the one or more database object updates associated with
each identified inflight unit of work from the snapshot in their sorted order.


38.    (Currently Amended) The method of claim 25 [[30]], wherein the act of
removing each of the one or more database object updates associated with each
identified inflight unit of work does not include removing database object updates that
effect structural changes in the source database objects in the snapshot.


39.    (Original) The method of claim 25, further comprising substituting the point-in-
time consistent copy for the source database objects in the database.

40.     (Currently Amended) The method of claim <u>25</u> [[39]], further comprising:

blocking access to the source database objects in the source database;

replacing the source database objects in the source database with the point-in-time consistent copy of the database objects; and

permitting access to the point-in-time consistent copy of the database objects in the database.


41.     (Currently Amended) A program storage device, readable by a programmable control device, comprising instructions stored therein for causing the programmable control device to:

identify one or more source database objects;

create a snapshot of the one or more source database objects at a point-in-time in a manner that does not substantially block access to the source database objects; [[and]]

~~make the snapshot consistent as of the point in time.~~

<u>identify changes to the source database objects as of the point-in-time that do not exist in the snapshot;</u>

<u>update the snapshot to reflect the identified changes;</u>

<u>identify inflight units of work associated with the source database objects as of the point-in-time, wherein each inflight unit of work is associated with one or more database object updates; and</u>

remove each of the one or more database object updates associated with each identified inflight unit of work from the snapshot.

42.     Cancelled.


43.     Cancelled.


44.     (Currently Amended) The program storage device of claim 41 [[43]], wherein the instructions to remove do not include instructions to remove database object updates that effect structural changes in the database objects.

45.    (Currently Amended) A program storage device, readable by a programmable control device, comprising instructions stored therein for causing the programmable control device to:

identify one or more source database objects in a database;

determine a point-in-time;

obtain a prior copy of the identified one or more source database objects, said prior copy having a creation time before the point-in-time; [[and]]

~~make the prior copy consistent as of the point-in-time.~~

identify inflight units of work associated with the source database objects as of the point-in-time, wherein each inflight unit of work is associated with one or more database object updates, said identified inflight units of work including a unit of work having an earliest start time, the earliest start time being closer to the creation time of the prior consistent copy than a start time associated with any other identified inflight unit of work;

apply database log entries to the prior copy from the creation time until the earliest start time; and

apply database log entries to the prior copy from the earliest start time until the point-in-time only if they are not associated with inflight units of work to generate a consistent point-in-time copy.

46.    Cancelled.

47.    Cancelled.

48.     (Original) The program storage device of claim 45, further comprising instructions to substitute the point-in-time consistent copy for the source database objects in the database.

49.     Cancelled.

50.     Cancelled.

51.     Cancelled.